

The Astronomy (by the Astronomer Royal) is the shortest article in the book, extending over no more than 12 pages. Hydrography, on the other hand, occupies 49 pages, and contains much useful information regarding soundings, the discovery of land, sailing directions, and artificial harbours. The directions are essentially practical and eminently suggestive; thus, take the following from *Approaching a coast*:—"Always bear in mind that no description can equal a tolerably faithful sketch, accompanied by bearings. In all four sketches take angles roughly with a sextant between objects at the extremities of four drawings, and two or more intermediate ones, and affix them to the objects of the moment, and have at least one angular height in the picture; let that be of the highest and most conspicuous or best defined object."

The article on Tides (26 pages) gives minute directions for tide observations and the construction of curve tables. The next section, on Terrestrial Magnetism, by Sir Edward Sabine, is of great importance, and describes the methods of observation most in vogue; the observations of local attraction, of vibration, of deflection, and so on. We miss, however, any account of the magnetism of iron ships, and the elimination of the compass error caused thereby. Also we feel assured that simple instructions for travellers as to the use of compasses on land, in the midst of forests, &c., would prove of much service. Under the heading Meteorology we find directions for observing systematically a large number of aerial phenomena, water-spouts, bull's-eye signals, showers of dust and ashes, cyclones, various electrical manifestations, &c. Passing over the articles on atmospheric waves and barometric curves, we come to that on Statistics, which is of very general interest, and relates to the state of education and crime of a people, the manufactures, commerce, currency, revenue, municipal regulations, &c. This is followed by "Medicine and Medical Statistics," regarding the various fevers and other diseases to which travellers are specially exposed, with hints for determining the geographical distribution of diseases.

The chapter on Ethnology by the late J. C. Prichard, revised by Mr. E. B. Tylor, is to be specially commended to the notice of travellers; under the term he includes "all that relates to human beings, whether regarded as individuals, or as members of families or communities;" the physical and social history of man. This chapter is divided into three parts:—(1) of the Physical Character of Nations; (2) Characteristics of the state of Society, &c.; (3) Language, Poetry, Literature. We are lamentably deficient in our knowledge regarding the earlier history of the physical sciences, and are glad to find that Mr. Tylor alludes to the acquirement of knowledge of this nature in the following paragraph:—"The crude notions entertained by uncivilised races on subjects within the scope of physical science are matters worthy of inquiry. Science they can hardly be said to possess, though this was scarcely true with the ancient Mexicans. All nations observe the changes of the moon, and measure the lapse of time with a greater or less degree of accuracy by the movements of some of the heavenly bodies. The special names given to the months, if any, should be recorded. Inquiry should be made whether the motions of the planets are observed, and whether these bodies are distinguished from fixed stars; what ideas are current as

to the conformation of earth and sky and the cause of eclipses; whether attempts are made to ascertain the duration of the solar year, whether there are names for the constellations, and what they are if they exist."

Of the remaining portions of this work we need only allude to that devoted to "Seismology, or Earthquake Phenomena," by Mr. Robert Mallet, which contains many details as to the observation of effects of rare occurrence in these latitudes, but to the traveller in South America the suggestions would be invaluable. Thus we have an account of instruments for observing the velocity and direction of the shock of an earthquake, observations to be made in a city affected by an earthquake, and the preparation of coseismic and meizoseismic curves. To conclude: the whole work is wonderfully suggestive, not alone to the traveller, but to the home observer; it teaches us to arrange in order and systematise our observations, and in so doing conveys a great deal of collateral information.

G. F. RODWELL

OUR BOOK SHELF

Gmelin-Kraut's Handbuch der Chemie, Anorganische Chemie. In Drei Bänden, Sechste umgearbeitete Auflage. Herausgegeben von Dr. Karl Kraut, Heidelberg. Erster Band zweite Abtheilung, pp. 176. (London: Williams and Norgate.)

It is now eighteen years since the appearance of the fifth edition of this work; this, of course has necessitated the change from the old atomic weights to the new, but the arrangement of the elements and sections of the book has been retained as in former editions. The present volume has been thoroughly revised, the information having been brought up to a very recent date; should the remaining volumes be equally reliable, it will probably be the most complete work on inorganic chemistry in any language. Dr. Kraut has obtained the assistance of Drs. Naumann, Ritter, and Jorgensen, in order to expedite the conclusion of the work. There is no book to our knowledge which contains so large an amount of information in a small space as Gmelin's Handbook. It is, as expressed in the preface, a complete, concise, and systematic handbook of chemistry up to the latest time. The merits of this book for the purposes of reference are so well known that it would be quite superfluous to enter into any lengthened description of it. In the volume now under consideration oxygen, hydrogen, carbon, boron, phosphorus, and sulphur, with some of their more important compounds, are treated of; the article on ozone and its properties is perhaps typical of the book, it occupies fourteen pages, and forms a very valuable and complete history of this body. The completion of the book may be looked for with interest, although necessarily it will be some time before this can be accomplished.

Astronomical Phenomena in 1872. By W. F. Denning, Hon. Sec. of the Observing Astronomical Society. (London: Wyman and Son.)

THIS brochure consists of some general remarks on astronomical observing, and some forty pages of data almost entirely taken from the "Nautical Almanack" for 1872. The former are addressed to the simplest tyro, and are so meagre as to give the impression of a want of accurate knowledge. In the section touching upon instruments we are told that "with regard to the spectroscope, micrometer, and other astronomical appliances, it will be better to say but very

little." Accordingly very little is said, and that little is unimportant. Speaking of objects, Mr. Denning startles us with the announcement that "Comets are not interesting objects in a telescope" (we should like to hear upon what experience he grounds this assertion); and he deals with the hypothetical plant Vulcan by naively telling his disciples that when a total eclipse of the sun "is in progress, the region of the heavens in the immediate vicinity of the solar orb should be subjected to very careful scrutiny." For such untutored gazers as are addressed in the earlier pages the data in the later sections are insufficient. There are no times of rising and setting of the moon and planets, no positions of Jupiter's satellites at times of eclipse, no information upon the points on the moon's limb at which occulted stars will disappear and reappear, no warning of the effects which change of geographical position will produce in some phenomena which are computed for Greenwich only. Altogether the book is a very weak production. J. C.

Die Arachniden Australiens nach der Natur beschrieben und abgebildet, von Dr. L. Koch. Erste Lieferung. Pp. 56. Plates iv. (Nurnberg, 1871.)

DR. L. KOCH intends in this work to describe the spiders of Australia, not confining himself apparently to the large insular tract that generally passes under this name, but taking in also the Viti Islands, the Friendly, Pelew, and other groups. In his Preface to this, the first portion of his work, he says that though he has with much care and industry for twenty years observed the Arachnida of a little circuit of not more than from four to five hours walk, yet every year there comes to light within this small compass some new species that had up to then remained concealed; indeed it often happened that each little journey increased the number of forms known in the district. How true this observation is every investigator will feel; but knowing and feeling it, what courage does it not require to set to work to write the history of the spiders of a district which itself is not even yet half explored; and when the spiders are done, we are promised another work on the Myriapods. Such courage deserves to succeed, and we wish the enterprise every prosperity. The work will be published at intervals of two months, and be completed in two years; each bi-monthly part will contain four plates and some five sheets of text.

Following the families and genera as laid down by Thorell in his "European Spiders," L. Koch commences with the Epeiridæ, and describes six new species of the interesting genus *Gasteracantha*. Here, as in the other genera, the new species are well figured by the author in quarto plates. It is to be observed that some of the species described are not to be met with, at least have not at present been met with, in any part of Australia, but are introduced into this work by the head and shoulders as it were thus:—*G. violenta* comes from New Guinea, and *G. hepatica* from Java. Two new genera, *Tholia*, with three species, and *Anepsia* for *Epeira rhomboides*, L.K., are given. Ten new species of the genus *Argiope* are described, and three new species of *Cyrtarachne*. The diagnoses of the new genera are very properly given in Latin, and the work may be regarded as quite indispensable to all those engaged in the study of the spiders. W.

LETTERS TO THE EDITOR

[The Editor does not hold himself responsible for opinions expressed by his correspondents. No notice is taken of anonymous communications.]

Change of Habits in Animals and Plants

SOME weeks since I sent a few notes on *Nestor notabilis*,* showing a curious change in the history of this mountain-kear. I now beg to add an extract from the *Otago Daily Times*, in confirma-

* See NATURE, vol. iv., pp. 489, 506.

tion of this strange story of the progressive development of change in the habits of the Kea, from the simple tastes of a honey-eater to the savageness of a carver of flesh:—

"Some time ago we mentioned that Mr. Henry Campbell, of Wanaka Station, had noticed that sheep on his run were frequently attacked by birds. We are indebted to Mr. Campbell for some further information on the subject. The birds in question are of the kind called by shepherds "the mountain parrot," and the scientific name of which is *Nestor notabilis*. The Maories call it the Kea. The birds come in flocks, single out a sheep at random, and each alighting on its back in turn, tears out the wool and makes the sheep bleed, till the animal runs away from the rest of the sheep. The birds then pursue it, continue attacking it, and force it to run about till it becomes stupid and exhausted. If in that state it throws itself down, and lies as much as possible on its back to keep the birds from picking the part attacked, they then pick a fresh hole in its side, and the sheep, when so set upon, in some instances dies. When the sheep stops bleeding the birds appear to cease to attack it, though Mr. Campbell is not very clear upon this point, and thinks they attack it more for sport than hunger. For three winters back his sheep have been attacked in this way, and it was not till this winter (though he previously suspected it) that he found the birds were the offenders. Where the birds so attack the sheep, the elevation of the country is from 4000 to 5000 feet above the sea level, and they only do so there in winter time. On a station owned by Mr. Campbell about thirty miles distant from the other, and at the same altitude, in the same district, and where the birds are plentiful, they do not attack the sheep in that way. For those on whose stations they are an annoyance, it may be mentioned that their numbers can be kept well thinned by shooting them. If one is wounded the rest gather round, and can be shot in fives and sixes at a time."

This note is interesting in the face of the destructive influence commonly exerted by introduced upon native life. Here we have an indigenous species making use of a recently imported aid for subsistence, at the cost of a vast change in its natural habits.

In the vegetable world we meet with a change in the habit of a native species* which is somewhat analogous.

Our *Loranthus micranthus* sometimes neglects its customary supports, found often on such trees as *Melicactus* or *Melicope* (representatives of *Violariæ* and *Rutacæ*), for the more attractive exotics, *Cytisus*, *Crætagus*, the plum, and the peach. Such change in its habits this fragrant parasite acquires at the cost of deserting the interlaced boughs of tangled gully for a more conspicuous position in the trim shrubbery or cultivated garden. At this time I can see a most vigorous specimen of *L. micranthus* growing on *Cytisus laburnum*, covered with countless panicles of perfume-laden blossoms, on which our introduced bee is luxuriously regaling. Here we have the foreign bee gathering sweets from native flowers growing on an exotic tree.

In this neighbourhood the laburnum was first planted, I believe, by myself, in 1859, and the bee introduced about the same time.

Ohinitahi, Oct. 7, 1871

THOMAS H. POTTS

A Case of Stationary Wave on a Moving Cord

IT is well known to mathematicians that a stretched cord, moving lengthwise with a velocity bearing a certain relation to its tension and weight, will retain any curvature which may be impressed upon it; and consequently would pass through a crooked tube without pressure against its sides. That this may

be the case, the velocity, V , must equal $\sqrt{\frac{T}{M}}$; T being the tension, and M the weight of the cord per unit of length.

Passing from a stationary curve on a moving cord to one moving along a fixed cord, it is easy to see that this velocity, V , must be that of the transmission of a transverse vibration; and from this immediately follows the formula for the times of vibration of stretched strings.

The case of the stationary wave, however, though simple in theory, is rarely practically realised; and I think a short notice of a case in which it is constantly produced may not be without interest.

In Captain Dennet's admirable invention for saving life from shipwrecks, a rocket is employed having a light line attached to it. This line is previously "faked down" on two rows of pins in a box; and, the pins being withdrawn, it remains in a series

* See Trans. New Zealand Institute, vol. iii., p. 190.